Supplementary Online Content

Douglas PS, Rzeszut AK, Merz CNB, Duvernoy CS, Lewis SJ, Walsh MN, Gillam L; for the American College of Cardiology Task Force on Diversity and Inclusion and American College of Cardiology Women in Cardiology Council. Career preferences and perceptions of cardiology among US internal medicine trainees: factors influencing cardiology career choice. *JAMA Cardiol.* Published online May 30, 2018. doi:10.1001/jamacardio.2018.1279.

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1: Career Choices of Those Not Selecting Cardiology

			Cardiolog	y Choice	
	All respondents	Current Cardiology (n=267)	Considered Cardiology (n=312)	Never considered cardiology (n=542)	P value
Allergy and immunology	1.2%	0.0%	1.3%	1.7%	0.113
Cardiovascular disease	19.2%	80.1%	0.0%	0.0%	0.000
Clinical cardiac electrophysiology	2.3%	9.7%	0.0%	0.0%	0.000
Critical care medicine	5.3%	0.0%	9.3%#	5.6%	0.000
Endocrinology, diabetes, and metabolism	3.0%	0.0%	3.2%	4.3%	0.003
Gastroenterology	9.3%	0.0%	12.9%	11.9%	0.000
General Internal Medicine	9.3%	0.0%	9.6%	13.7%	0.000
Geriatric medicine	1.5%	0.0%	1.6%	2.2%	0.053
Hematology	3.0%	0.0%	3.2%	4.3%	0.003
Hospice and palliative medicine	0.4%	0.0%	1.0%	0.4%	0.209
Infectious disease	5.4%	0.0%	5.1%	8.2%	0.000
Interventional cardiology	2.4%	10.1%	0.0%	0.0%	0.000
Medical oncology	7.8%	0.0%	8.4%	11.3%	0.000
Nephrology	4.1%	0.0%	8.0%#	3.9%	0.000
Primary Care	4.5%	0.0%	2.6%##	7.8%	0.000
Pulmonary disease	2.2%	0.0%	4.2%	2.2%	0.003
Rheumatology	2.0%	0.0%	1.9%	3.0%	0.017
Sleep medicine	0.3%	0.0%	0.3%	0.4%	0.620

Sports medicine	0.2%	0.0%	0.3%	0.2%	0.660
Transplant hepatology	0.3%	0.0%	0.0%	0.6%	0.201
Basic science	2.0%	0.0%	2.3%	2.8%	0.026
Other medical subspecialty: (please specify)	4.0%	0.0%	4.5%	5.8%	0.000
Non-medical	1.3%	0.0%	2.9%	1.1%	0.009
Undecided	8.5%	0.0%	17.0%###	7.8%	0.000

Statistical significance indicators are the same as Table 1.

eTable 2: Importance of Factors in Professional Development

	Factor	All		S arr		Cardiology Choice						
	Loading	respondents		Sex			Cardiology	Choice				
							Considere	Never				
						Current	d	considered				
	All		Men	Women	Р	cardiology	cardiology	cardiology				
	respondents	(n=1123)	(n=625)	(n=494)	value	(n=267)	(n=312)	(n=542)	P value			
						3.11***##						
Stable Hours (beta 0.45)		3.43	3.32	3.58	0.000	#	3.54	3.53	0.000			
Having limited work hours during					0.07							
training	0.754	3.26	3.21	3.32	3	3.04***##	3.37	3.30	0.001			
The ability to have stable, predictable						3.47***##						
hours	0.743	3.80	3.73	3.89	0.008	#	3.94	3.89	0.000			
						3.31***##						
The amount of overnight call	0.739	3.56	3.50	3.64	0.033	#	3.64	3.63	0.000			
						3.25***##						
The ability to have a flexible schedule	0.709	3.66	3.52	3.83	0.000	#	3.80	3.78	0.000			
						2.46***##						
The ability to work part-time	0.602	2.87	2.59	3.22	0.000	#	2.94	3.03	0.000			
						3.38***##						
Family Friendly (beta 0.45)		3.57	3.45	3.73	0.000	#	3.64	3.63	0.000			
Having time to spend with my												
family/children	0.771	4.26	4.18	4.36	0.002	4.03**###	4.28	4.36	0.000			
Having children in the next 5 years	0.728	3.55	3.39	3.76	0.000	3.34#	3.61	3.63	0.015			

Having family support nearby during									
training	0.681	3.78	3.69	3.89	0.005	3.73	3.82	3.77	0.638
Having a spouse with a flexible					0.919				
schedule	0.653	3.73	3.74	3.73		3.72	3.78	3.71	0.648
Fellowship program where taking						2.89***##			
maternity/paternity leave is accepted	0.590	3.30	2.95	3.71	0.000	#	3.43	3.43	0.000
The desire for a "family-friendly"						3.53***##			
profession	0.514	3.82	3.71	3.95	0.001	#	3.87	3.93	0.000
Program where on-site daycare is									
available	0.488	2.43	2.24	2.66	0.000	2.23**	2.60	2.42	0.004
						2.26***##			
Female-Friendly (beta 0.23)		2.52	1.98	3.17	0.000	#	2.65	2.57	0.000
Having a supportive female role									
model or mentor in my field of choice	0.798	2.65	1.79	3.54	0.000	2.32**##	2.77	2.73	0.000
The desire for a "female-friendly"						2.23***##			
profession	0.718	2.79	1.88	3.66	0.000	#	2.86	2.99	0.000
Having a supportive role model or									
mentor of my race/ethnicity in my									
field of choice	0.554	2.18	2.10	2.29	0.019	2.27	2.33#	2.07	0.007
Positive Role Models (beta 0.19)		4.39	4.33	4.46	0.000	4.37	4.42	4.38	0.540
Having received positive									
encouragement to pursue my field of									
choice	0.759	4.41	4.34	4.51	0.001	4.43	4.43	4.40	0.804
Seeing role models in my field of									
choice who successfully balance their	0.708	4.39	4.32	4.48	0.004	4.35	4.38	4.42	0.535

professional and personal									
responsibilities									
Having a supportive role model or					0.243				
mentor in my field of choice	0.622	4.45	4.43	4.48		4.55#	4.44	4.41	0.037
Having fellowship programs in my									
field of choice appreciate the need to									
balance professional and personal									
responsibilities	0.479	4.29	4.23	4.37	0.01	4.15***	4.43	4.29	0.000
					0.50				
Financial Benefits (beta 0.18)		3.12	3.13	3.10	1	3.10*	3.31 † † †	3.02	0.000
The ability to buy a nice house	0.897	3.20	3.29	3.08	0.002	3.26#	3.38 ± ± ±	3.06	0.000
Making a lot of money	0.847	2.96	3.12	2.75	0.000	3.11###	3.18 + + +	2.76	0.000
The ability to hire a nanny or pay for									
private daycare/school	0.730	2.91	2.76	3.10	0.000	2.75**	3.09	2.89	0.01
The need to repay significant loans	0.540	3.42	3.36	3.49		3.31*	3.61	3.37	0.05
Professional Challenges (beta 0.14)		3.03	3.10	2.94	0.001	3.32###	3.20 1 1 1	2.79	0.000
Concern that I might not be accepted									
into the fellowship program of my					0.102				
choice	0.777	3.13	3.18	3.05		3.30###	3.52 + + +	2.80	0.000
The desire for a less competitive					0.281				
application process	0.688	2.91	2.94	2.86		2.89**	3.24 # # #	2.72	0.000
The opportunity to perform						4.29***##			
procedures	0.543	3.47	3.70	3.18	0.000	#	3.58 111	3.00	0.000
Seeing patients in a short-term,									
consultative capacity	0.451	3.14	3.26	3.00	0.000	3.51**###	3.22 + + +	2.92	0.000
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The possibility of radiation exposure	0.327	2.49	2.37	2.63	0.000	2.57	2.46	2.47	0.455
Patient Focus (beta 0.11)		3.63	3.56	3.73	0.001	3.73	3.59	3.61	0.105
Having long-term relationships with									
my patients	0.834	3.89	3.84	3.96	0.038	4.02*	3.81	3.88	0.034
Tending to patients' social and									
psychological needs	0.779	3.42	3.30	3.57	0.000	3.28	3.42	3.48	0.057
Addressing issues in preventative					0.07				
medicine	0.648	3.59	3.54	3.65	8	3.88**###	3.55	3.46	0.000
						4.16***##			
Stimulating Career (beta 0.03)		3.71	3.84	3.54	0.000	#	3.73 + + +	3.47	0.000
						3.51***##			
Desire to be a trendsetter	0.814	3.01	3.27	2.68	0.000	#	3.09 1 1 1	2.71	0.000
						4.32***##			
Desire to pursue a challenge	0.793	3.97	4.05	3.87	0.001	#	3.94	3.81	0.000
Desire to pursue a career that not just									
anyone can do	0.756	3.49	3.63	3.31	0.000	3.89**###	3.57 + + +	3.23	0.000
A desire to make important scientific						4.03***##			
contributions to my field	0.735	3.49	3.67	3.27	0.000	#	3.51 # #	3.22	0.000
						4.52***##			
Being an expert in a specific topic	0.534	4.08	4.17	3.96	0.000	#	4.08 ± ±	3.86	0.000
						4.13***##			
Caring for critically ill patients	0.373	3.35	3.52	3.14	0.000	#	3.38 + + +	2.94	0.000
The subject matter of my field of					0.446	4.70***##			
choice	0.327	4.54	4.53	4.56		#	4.49	4.49	0.000

Factor categories (bold) are shown in descending order of the beta coefficient in an 8-factor model explaining 59% of the variance. Betas were calculated by forcing the career importance statements into one factor then conducting a linear regression of the 8-factor solution on the single factor. Within each category, individual questions are shown in descending order of weight within that factor category. All values other than factor weight represent mean response on a 5-point Likert scale, in which 1 = not important and 5 = very important.

Statistical significance indicators are the same as Table 1.

eTable 3: Agreement with Perceptions of the Cardiology Field

	Factor	All	Sex				Cardiology Choice					
	Loading	respondents		Sex			Cardiology	Choice				
	All responden ts	(n=1123)	Men (n=625)	Women (n=494)	P value	Current cardiology (n=267)	Considered cardiology (n=312)	Never considered cardiology (n=542)	P value			
Adverse job conditions (beta												
0.566)		3.14	3.09	3.20	0.034	3.02**	3.23	3.15	0.009			
There is too much overnight call in cardiology	0.856	3.21	3.19	3.24	0.441	3.02***#	3.35	3.23	0.001			
Cardiology fellowship is too "demanding."	0.835	3.23	3.16	3.31	0.019	2.99***##	3.35	3.27	0.000			
Schedule of a practicing cardiologist is too unpredictable	0.712	3.32	3.31	3.32	0.873	3.21*	3.45	3.29	0.012			
Exposure to radiation in cardiology is a concern	0.306	2.83	2.73	2.95	0.002	2.88	2.80	2.82	0.640			
Interferes with family life (beta												
0.534)		3.77	3.65	3.92	0.000	3.53***###	3.86	3.84	0.001			
Being a cardiology fellow would be												
easier for individuals who are single	0.761	3.84	3.81	3.88	0.279	3.63**##	3.93	3.90	0.002			
It would be challenging to have												
children during cardiology fellowship	0.758	3.86	3.69	4.06	0.000	3.56***###	3.96	3.95	0.000			
Family responsibilities can interfere	0.732	3.75	3.70	3.82	0.54	3.47***###	3.85	3.84	0.000			

with training in cardiology									
Cardiology is a "male-dominated"									
field	0.668	3.64	3.42	3.91	0.000	3.47#	3.68	3.71	0.011
Not diverse (beta 0.180)		3.09	3.03	3.17	0.031	3.04	3.19	3.06	0.136
There is a need to increase									
awareness in medicine of issues in									
race and ethnicity	0.872	3.28	3.21	3.38	0.024	3.23	3.34	3.27	0.498
There is not enough racial and ethnic									
representation in cardiology	0.854	2.94	2.86	3.04	0.013	2.84	3.07	2.92	0.049
CV Role Model/Positive Role									
Models (beta 0.162)		3.74	3.79	3.66	0.022	4.03***###	3.67	3.61	0.000
I have met positive female role									
models in cardiology	0.825	3.41	3.41	3.40	0.830	3.68**###	3.35	3.30	0.000
I have met positive role models in									
cardiology	0.822	4.11	4.16	4.05	0.058	4.47***###	4.08	3.93	0.000
I have met positive role models of									
my race/ethnicity in cardiology	0.747	3.70	3.82	3.54	0.000	3.93**##	3.62	3.61	0.002
Compensation and work									
integration (beta 0.072)		3.60	3.57	3.62	0.212	3.74***###	3.54	3.55	0.000
Salaries of academic cardiologists									
are reasonable	0.801	3.49	3.37	3.65	0.000	3.35##	3.49	3.57	0.008
Salaries of cardiologists in private									
practice are reasonable	0.788	3.89	3.88	3.92	0.580	4.06##	3.89	3.81	0.005
The length of training in cardiology									
is reasonable	0.512	3.56	3.49	3.64	0.013	3.52	3.53	3.59	0.473
				•					1

In cardiology, it is possible to have									
both a rewarding career and a									
successful family life	0.327	3.46	3.56	3.33	0.000	4.00***###	3.28	3.28	0.000
Intellectually stimulating (beta									
0.004)									
I like cardiac pathophysiology	0.877	3.92	4.07	3.74	0.000	4.70***###	4.12###	3.39	0.000
No Category									
I have been discouraged from									
choosing a career in cardiology		2.19	2.22	2.15	0.308	2.13***	2.53###	2.01	0.000

Factor categories (bold text) are shown in descending order of the beta coefficient in a 6-factor model explaining 62% of the variance. Within each category, individual questions are shown in descending order of weight within that factor category. Betas were calculated by forcing the perceptions of cardiology statements into one factor then conducting a multifactor linear regression of the 6-factor solution on the single factor. All values other than factor weight represent mean response on a 5-point Likert scale, in which 1 = strongly disagree and 5 = strongly agree. Statistical significance indicators are the same as Table 1.

<u>Appendix</u>

Internal Medicine Residents Survey – 2009-2010

The following survey is to help understand the factors that influence fellowship decision-making with a particular focus on cardiology. You do *not* have to be applying for a cardiology fellowship to participate. Survey responses will be confidential. Thank you for your participation.

Please indicate your likelihood to pursue the following career plans:

Not at all				Definitely	
likely - 1	2	3	4	Likely - 5	N/A
0	0	Ο	Ο	0	0
0	0	О	О	Ο	0
0	О	0	Ο	0	0
0	О	О	О	Ο	О
					•

(End of Page 1)

The next series of questions investigates the importance of various factors in your professional development. Please rate the importance of each factor to you personally:

Lifestyle Issues

Q.2

	Not at all			Extremely			
	important-1	2	3	4	Important-5	N/A	
Having a supportive role model or mentor in my field of choice	0	Ο	0	Ο	0	0	
Having a supportive <i>female</i> role model or mentor in my field of choice	0	Ο	0	Ο	0	0	
Having a supportive role model or mentor of my race/ethnicity in my field of choice	0	Ο	0	Ο	0	0	
Seeing role models in my field of choice who successfully balance their professional	0	О	0	0	0	0	

and personal responsibilities Having received positive encouragement to pursue my field of choice	0	0	0	0	0	0
Family.						
Q.3	Not at all				Extremely	
	important-1	2	3	4	Important-5	N/A
Having fellowship programs in my field of choice appreciate the need to balance	Ο	0	Ο	0	Ο	0
professional and personal responsibilities						
The desire for a "female-friendly" profession	0	0	Ο	0	Ο	0
The desire for a "family-friendly" profession	Ο	0	Ο	0	Ο	0
Program where on-site daycare is available	0	0	Ο	0	0	0
Fellowship program where taking maternity/paternity leave is accepted	Ο	0	0	О	0	0
The possibility of radiation exposure	Ο	0	0	О	0	0
Having children in the next 5 years	0	0	Ο	0	0	0
Having time to spend with my family/children	0	0	Ο	Ο	Ο	0
Having family support nearby during training	0	0	Ο	Ο	Ο	0
Having a spouse with a flexible schedule	Ο	Ο	Ο	Ο	0	Ο

(End of Page 2)

Process/Interest Q.4	Not at all				Extremely	
0:4	important-1	2	3	4	Important-5	N/A
The ability to work part-time	O	Ō	Õ	Ò	Q	0
The ability to have a flexible schedule	Ο	0	О	Ο	Ο	Ο
The ability to have stable, predictable hours	0	0	Ο	Ο	0	Ο
Having limited work hours during training	0	О	Ο	Ο	0	Ο
The amount of overnight call	0	0	0	0	0	О
Q.5	Not at all				Extremely	
	important-1	2	3	4	Important-5	N/A
The desire for a less competitive application process	Ο	Ο	0	Ο	0	Ο
Concern that I might not be accepted into the fellowship program of my choice	Ο	0	0	О	0	О
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Q.6	Not at all				Extremely	
	important-1	2	3	4	Important-5	N/A
The opportunity to perform procedures	Ο	Ο	Ο	0	Ο	Ο
The subject matter of my field of choice	Ο	Ο	Ο	Ο	Ο	О
Having long-term relationships with my patients	Ο	Ο	Ο	0	Ο	Ο
Being an expert in a specific topic	Ο	0	Ο	0	Ο	О
Tending to patients' social and psychological needs	Ο	Ο	Ο	Ο	Ο	О
Seeing patients in a short-term, consultative capacity	Ο	Ο	Ο	Ο	Ο	О
Caring for critically ill patients	Ο	Ο	Ο	Ο	0	О
Addressing issues in preventative medicine	Ο	Ο	Ο	Ο	Ο	О
A desire to make important scientific contributions to my field	0	0	0	0	Ο	0
Prestige.						
Q.7	Not at all				Extremely	
	important-1	2	3	4	Important-5	N/A
Desire to be a trendsetter	Ο	Ο	Ο	0	0	Ο
Desire to pursue a challenge	Ο	Ο	Ο	Ο	0	0
Desire to pursue a career that not just anyone can do	O	0	0	0	Ο	0
Income.						
Q.8	Not at all				Extremely	
	important-1	2	3	4	Important-5	N/A
Making a lot of money	0	Ο	Ο	Ο	0	Ο
The ability to buy a nice house	0	Ο	Ο	0	0	Ο
The ability to hire a nanny or pay for private daycare/school	0	Ο	Ο	Ο	0	Ο
The need to repay significant loans	0	О	0	Ο	0	Ο

(End of Page 3)

How much do you agree or disagree with the following statements:

Q.9

Strongly

Strongly

	Disagree 1	2	3	4	Agree 5	N/A
Family responsibilities can interfere with training in cardiology	Ο	0	Ο	0	0	0
It would be challenging to have children during cardiology fellowship	Ο	Ο	Ο	0	0	Ο
Exposure to radiation in cardiology is a concern	Ο	0	Ο	0	0	0
Being a cardiology fellow would be easier for individuals who are <i>single</i>	Ο	Ο	Ο	Ο	Ο	0
Cardiology is a "male-dominated" field	Ο	Ο	Ο	Ο	Ο	0
I have met positive role models in cardiology	Ο	0	Ο	0	0	0
I have met positive <i>female</i> role models in cardiology	Ο	Ο	Ο	0	0	Ο
I have met positive role models of my race/ethnicity in cardiology	Ο	0	Ο	0	0	0
I have been discouraged from choosing a career in cardiology	Ο	0	Ο	0	0	0
The length of training in cardiology is reasonable	Ο	О	О	0	0	О

How much do you agree or disagree with the following statements:

Q.10	Strongly				Strongly	
	Disagree 1	2	3	4	Agree 5	N/A
Cardiology fellowship is too "demanding."	Ο	0	0	Ο	Ο	Ο
There is too much overnight call in cardiology	Ο	0	0	Ο	Ο	Ο
I like cardiac pathophysiology	0	0	0	Ο	Ο	0
Schedule of a practicing cardiologist is too unpredictable	Ο	0	0	Ο	Ο	Ο
In cardiology, it is possible to have both a rewarding career and a successful family life	0	0	Ο	Ο	Ο	Ο
Salaries of academic cardiologists are reasonable	0	0	0	Ο	Ο	0
Salaries of cardiologists in private practice are reasonable	Ο	0	0	Ο	Ο	Ο
There is not enough racial and ethnic representation in cardiology	0	0	0	Ο	Ο	0
There is a need to increase awareness in medicine of issues in race and ethnicity	Ο	0	Ο	0	0	0

(End of Page 4)

Please answer the following demographic questions

11. Gender

 \mathbf{O} Male

O Female

12. Age
13. Year of College Graduation
14. College Major
15. Year of Medical School Graduation
 16. Race/Ethnicity Caucasian African American Asian Hispanic Native American Other
 17. Degrees (Check all that apply) MD PhD MPH

🗖 JD

D MBA

Other: _____

18. What is your current medical track

O Categorical

O Preliminary

O Primary Care

 $\mathbf{O} \; \mathsf{Med/Peds}$

19. What is your level of training?

 \mathbf{O} Intern

O Junior Resident

 ${\bf O}$ Senior Resident

O Other _____

20		
20.	answer	required)

What is the name of your hospital/training program? _____

21. In what country did you attend medical school?

Country: _____

(End	of F	'age	5)
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22. What is your marital status?^(required)

- O Single SKIP TO Q.28
- **O** Have a significant other

O Married

O Divorced/Separated SKIP TO Q.28

O Other ______ SKIP TO 0.28

(End of Page 6)

23. Does your spouse or significant other work outside the home?^(required)

- **O** Yes
- O No SKIP TO Q.28

(End of Page 7)

24. What kind of work does your spouse do? _____

25. How many hours does your spouse work per week?

- **O** Less than 40 hours
- **O** 41-59 hours
- **O** 60 or more hours

26. Your spouse's work schedule is:

O Full time

О	Part	Time
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27. Your spouse's work schedule is:

O Flexible

 ${\bf O}$ Not flexible

(End of Page 8)

28. Do you have any children? ^(required)	
O Yes	
O No SKIP TO Q.35	
	(End of Page 9)
	(0,
29. How many children do you have?	
30. Do you plan to have more children in the future?	
O Yes	
O No	
O Not sure	
31. At what stage of your training did you first have children?	
O Undergraduate	
O Medical School	
O Residency	
O Other	
32. What are your child care arrangements (select all that apply)?	
Spouse is primary caretaker	
Daycare	
🖵 Nanny	
Relatives	
🖵 Other	

33. Do you have family members/others who help with the care of your children?

O Yes

O No

34. Do you have financial support from family members/others?

O Yes

 \mathbf{O} No

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35. ASK IF CURRENTLY DO NOT HAVE CHILDREN Do you plan to have children in the future?

O Yes

O No

 ${\mathbf O}$ Not sure

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36. What is your household's estimated annual income?

O Less than \$100,000/year

○ \$100,000-\$200,000/year

O More than \$200,000/year

37. What specific area of medicine do you plan to pursue?

 ${\bf O}$ Adolescent medicine

O Allergy and immunology

 ${\bf O}$ Cardiovascular disease

O Clinical cardiac electrophysiology

 ${\bf O}$ Critical care medicine

O Endocrinology, diabetes, and metabolism

O Gastroenterology

O General Internal Medicine

 ${\bf O}$ Geriatric medicine

O Hematology

O Hospice and palliative medicine

O Infectious disease

- **O** Interventional cardiology
- **O** Medical oncology
- **O** Nephrology
- **O** Primary Care
- $\mathbf{O} \ \text{Pulmonary disease}$
- **O** Rheumatology
- ${\bf O}$ Sleep medicine
- ${\mathbf O}$ Sports medicine
- **O** Transplant hepatology
- **O** Basic science
- **O** Other medical subspecialty: (please specify)
- ${\bf O}$ Non-medical field
- $\mathbf{O} \ {\rm Undecided}$

38. Have you ever planned on pursuing a career in cardiology in the past if you are not currently?

- $\mathbf{O} \; \text{Yes}$
- O No

39. Finally, please provide us with an explanation of the key factors that influenced your subspecialty choice.

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To thank you for participation in this research we would like to offer you the opportunity to be included in a drawing for 1 of 10 iPod Touches. If you would like to be included in the drawing please provide your name and email address below. This information will not be utilized for any other purpose.

Name _____

Email Address _____

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